APPENDIX A: FAA INFORMATION TECHNOLOGY STANDARDS

Technology Reference Model			IT Standards			Note: NA=Date / Date Range unknown TBD=Date / Date Range not yet established						
SERVICE AREA	**SERVICE CATEGORY**	**SERVICE STANDARD**	**SERVICE SPECIFICATION**	**Technology Standard**	**Scope (FAA or NRSA)**	**Emerging Standard**	**Current Standard**	**Contained Standard**	**Sunset standard**	**Current Agreements/ POC**	**Comments**	**Rationale**
Service Access and Delivery	Access Channels	Web Browser	Client Browsers	Internet Explorer 5.5	NRSA	NA	NA	NA	1/1/2009			
				Internet Explorer 6	NRSA	NA	7/7/2004 to 8/1/2010	8/1/2010 to 12/312010	12/31/2010			Rationale: Compatible with FAA's adoption of Microsoft desktop operating system and office automation
				Internet Explorer 7	NRSA						Rejected as a standard	
				Internet Explorer 8	NRSA	8/1/2009 to 1/26/2010	1/26/2010 to 12/31/2011	1/1/2012 to 6/1/2013	6/2/2013		FAA plans to avoid Internet Explorer 7.0 and plans to migrate to Internet Explorer 8.0. Testing for IE8 has begun as of July 2009. Migration timing will vary by LOBs but is mostly expected to take place in 2010 with some staff offices going to IE8 in early 2010	
				Internet Explorer 9	NRSA	9/1/2010 - 7/1/2011	TBD	TBD	TBD		Currently available as a preview demo. Beta is expected to be released 4th quarter 2010	
		Wireless/ PDA	Mobile Connectivity	Broadband Wireless	NRSA					FAA Wireless contract	Wireless Carriers vary	
				Blackberry PDA	NRSA						See National Wireless Contract for details on models and versions	
		Collaboration/ Communication	Electronic Mail	Lotus Notes 6.5	NRSA	NA	NA	9/1/2009-12/31/2010	12/31/2010			Rationale: Competitively awarded to Lotus Notes originally.
				Lotus Notes 8.0.2	NRSA	NA	9/1/2009-3/1/2011	TBD	TBD			
				Lotus Notes 8.5.1	NRSA	9/1/2009-9/1/2010	9/1/2010 - TBD	TBD	TBD			
			Unified Communcation and Collaboration	Lotus SameTime	NRSA	NA	6/1/2009 - TBD	TBD	TBD			
		Other Electronic Channels	PC-Mainframe Access		NRSA							
	Delivery Channels	Internet										
		Intranet	Thin Client	Citrix Metaframe	NRSA							
		Extranet	Remote Access Client	Cisco VPN Client								
				Juniper SSL	NRSA							
		Peer to Peer (P2P)	File Sharing	Not authorized								
		Virtual Private Network (VPN)	VPN Solutions	FIPS 140-2								
				FIPS 140-3	FAA							
				IETF 4510	FAA							
				FTI SSL Solution	FAA							
				FTI FRAC Solution, AVS IAP VPN at AEA, Cisco RSA 2 factor (AGL and other IAPs), and other solutions managed by FAA Internet Access Points	FAA							

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				Solutions provided by FTI FRAC (includes dialup and broadband). Other solutions must meet the requirements stated in Comments;	FAA							
	Service Requirements	Legislative/ Compliance	Web Content Accessability	Section 508 Compliance	FAA							
			Security									
		Authentication/ single sign-on	Smart Card Reader	FIPS 201-1	FAA							
				1) Transparent smart card reader (vetted by GSA Approved Product List) that is FIPS 201 compliant; must be bought off FAA Dell BPA,	FAA							
			Smart Card Software	2) PIV middleware software called ActivClient 6.1 offered by Actividentity Inc.	FAA							
		Hosting										
	Service Transport	Supporting Network Services	Lightweight Directory Access Protocol	IETF 4510 (LDAP)	NRSA	NA	6/1/2006 - TBD	TBD	TBD		http://www.rfc-archive.org/getrfc.php?rfc=4510&tag=Lightweight-Directory-Access-Protocol (LDAP)--Technical-Specification-Road-Map	
			SMTP	IETF RFC 5321 - SMTP	NRSA	NA	10/1/2008 - TBD	TBD	TBD		http://tools.ietf.org/html/rfc5321	
		Service Transport	HTTP	ISO/IEC 15445:2000(E)	NRSA	NA	5/15/2000-1/1/2014	TBD	TBD		http://www.scss.tcd.ie/misc/15445/15445.HTML	
				W3C HTML 4.01 (relates to ISO/IEC 15445:2000)	NRSA	NA	1/1/2000-1/1/2011	TBD	TBD		http://www.w3.org/TR/html401/	
				W3C HTML 5	NRSA	5/1/2010-1/1/2011	TBD	TBD	TBD		http://dev.w3.org/html5/spec/	
			HTTPS	ITEF RFC 2818	NRSA							
			Secure FTP	SSL compliant software such as Blue Zone	NRSA							
		Wireless/ Mobile	Mobile Operating Systems									
		Platform Independent	Platform Independent Operating Systems									
				Windows XP SP2	NRSA	NA	NA	1/1/2010- 12/30/2010	12/31/2010		Released August 2004	Mainstream Microsoft support for XP SP2 ends 13 July 2010
				Windows XP SP3	NRSA	NA	1/1/2009 - 9/30/2011	9/30/2011 - TBD	TBD		Released April 2008	

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	Support Platforms	Platform Dependent	Platform Dependent Operating System	Windows 7	NRSA	1/1/2009 - 10/31/2010	11/1/2010 - TBD	TBD	TBD	Some FAA organizations participate in a Microsoft Enterprise License Agreement. See your CIO for more information.	Decision was made to skip Vista and adopt Windows 7	Rationale: a) ATO, AVS, and other parts of FAA have entered into an enterprise license for Microsoft products, b) see the "2007 analysis on Microsoft enterprise license and competing products (Open Office, Google) by ARD" and c) fosters sharing of files and information with the rest of DOT, other federal agencies, and with public stakeholders"
	Delivery Services	Web Servers	Internet Information Server	IIS 6	NRSA							
				IIS 7	NRSA							
		Media Servers	Media Sharing and storage	Adobe Flash (current or most recent past version)	NRSA	NA	1/1/2005 - TBD	NA	NA	SAVES Microtech	Flash Player offers a better view of FAA Focus; Flash Player is also planned for additional FAA internal and external communications and training materials. Updated version numbers on Windows Media Player.	
				Windows Media Player (current or most recent past version)	NRSA	NA	1/1/2005 - TBD	NA	NA	DOT MS EA		
		Application Servers	Document Management	EMC Documentum	NRSA	11-19-2009 - TBD	TBD	TBD	TBD	SAVES Microtech		
				SharePoint 2010 (Microsoft Corp.)	NRSA	11-19-2009 - TBD	TBD	TBD	TBD	MS SA Agreements		
			Content Management									
		Portal Servers	Enterprise Portal Servers									
	Software Engineering	Integrated Development Environment	Integrated Development Technologies									
		Software Configuration Management	SCM Technologies	IBM Telelogic Synergy 7.0	NRSA	TBD	7/30/2009 - TBD	TBD	TBD			
		Test Management	Software Vulnerability Analysis	HP Web Inspect	NRSA	TBD	5/20/2010 - TBD	TBD	TBD			
				Veracode Security Review®	NRSA	TBD	5/20/2010 - TBD	TBD	TBD			
		Modeling	Data Modeling	CA ERwin Data Modeler (Computer Associates)	NRSA	TBD	4/17/2006 - TBD	TBD	TBD	SAVES		
				IBM System Architect	NRSA	TBD	7/30/2009 - TBD	TBD	TBD	SAVES Microtech		
	Database/ Storage	Database	Database Technologies	Structured Query Language (SQL)	NRSA	TBD	4/17/2006 to TBD	TBD	TBD			Rationale: a) DOT and FAA have an enterprise license for many Oracle products, c) AVS has an enterprise
				Oracle 11g								
				Oracle 12g								
				Microsoft SQL Server 2005								
				Microsoft SQL Server 2008								
				Microsoft SQL Server 2008 R2								
		Storage	Storage Technologies	Sun								
				NetApp								
				Hitachi								
				Dell								
		Servers/ Computers	Enterprise Servers	See Servers tab for models and specificaitons								
			Server Operating Systems	Server 2000								
				Server 2003								
				Server 2008								
				Server 2008 R2								
				Sun Solaris 10								
				Red Hat Enterprise Linux								
			Server Virtualization	VMware server products from VMware, Inc.; Includes VMware ESX Server, VMware Server, etc.								

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Service Platform and Infrastructure	Hardware/ Infrastructure	Embedded Technology Devices	Microprocessor - Server	See Servers Tab for models and specifications								
			Microprocessor - Desktop	Intel Pentium IV								
				Intel core 2 duo processor, 2.5 GHz or higher								
				Intel Core I5 1.6 GHz or higher								
			Data Center Utilities									
			Microprocessor - Laptop	Intel core 2 duo processor, 2 GHz or higher								
				Intel Core I5 1.6 GHz or higher								
			RAM	1GB								
				4GB								
			Hard Disk Drive	Minimum 20 GB	FAA							
				Minimum 80 GB	FAA							
			Solid State Drives									
			Optical Disk									
			Storage	USB storage device								
				CD-RW/DVD-R								
		Peripherals	CD/DVD Creation	CD/DVD-R Software								
			Network Card	10 Mpbs Ethernet								
				10/100/1000 Mbps Ethernet								
			Monitor	19" LCD Monitor (Section 508 Compliant)								
				LCD Monitor (Section 508 Compliant)								
			Video Card	Industry Standard Video Card (as supplied)								
			Keyboard	Industry Standard Keyboard (as supplied)								
			Mouse	2 button optical scroll mouse (not wireless)								
			Sound Card	Industry Standard Sound Card (as supplied)								
			USB Ports	Minimum of 2 USB 2.0 ports								
			Printers	printers that support double sided printing as well as Copiers that support double side copying of internal government documents								
		Wide Area Network (WAN)	WAN									
		Local Area Network (LAN)	LAN									

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		Network Devices/ Standards	Network Infrastructure Devices	See Tab for network devices (including routers and switches)								
			Network Access Devices	CounterAct from ForeScout Technologies Inc (network access control)								
		Video Conferencing	H.323, H.239 for conference room systems	Tanenberg VTC Systems								
				Polycom VTC Systems								
Component Framework	Security	Certificates/ Digital Signatures	Certificates									
		Supporting Security Services	Laptop Encryption	FIPS 140-2								
				FIPS 140-3	FAA							
				SafeBoot	FAA							
				McAfee End Point Encryption	FAA							
			DLP Technologies	Symantec Vontu	FAA	NA	5/1/2010-TBD	TBD	TBD		Spring 2010 - CIO Council chartered a study on this which led to this standard.	
			Client Antivirus	Trend Micro								
				McAfee								
				Symantec								
			SOA Security	See SOA Standards Tab								
	Presentation/ Interface	Static Display										
		Dynamic/ Server-side Display										
		Content Rendering										
		Wireless/ Mobile/ Voice										
	Business Logic	Platform Independent										
		Platform Dependent										
	Data Interchange	Data Exchange	SOA Communications	See SOA Standards Tab								
	Data Management	Database Connectivity										
		Reporting and Analysis	Report and Analysis - Middle Management	Business Objects from Business Objects Inc								
				Oracle Discoverer								
			Report and Analysis - Operational	Oracle Discoverer								
			Reporting and Analysis - Senior									
Service Interface and Integration	Integration	Middleware		See SOA Standards Tab								
		Enterprise Application Integration		See SOA Standards Tab								
	Interoperability	Data Format/ Classification		See SOA Standards Tab								
		Data Types/ Validation		See SOA Standards Tab								

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		Data Transformation		See SOA Standards Tab								
	Interface	Service Discovery		See SOA Standards Tab								
		Service Description/ Interface		See SOA Standards Tab								
FAA Specific Services	Business Management Applications	Desktop Suite	Productivity Suite	Office 2003 SP2								
				Office 2003 SP3								
				Office 2007								
				Office 2010								
		Project Management	Project Management Applications	Microsoft Project (current and most recent past version)								
		File Compression	File Compression & Encryption	FIPS 140-2								
				WinZip SecureZip								
		Document Management	Enterprise Document Management	EMC Documentum								
				Windows SharePoint 3								
				Office SharePoint 2007								
				SharePoint 2010								
		PDF	PDF Tools	Adobe Acrobat Reader (most current version)								
				Adobe Acrobat Professional (most current version)								
		Business / Technical Drawing / Graphics	Diagramming Tools	Visio 2003								
				Visio Process Integrator								
				IBM System Architect								
			Graphics									

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	Access Channels	**Web Browser**	*See Appendix A - New Types*	*See Appendix A - New Types*	*See Appendix A - New Types*			
		Wireless/PDA	HTTP	Blackberry PDA				Per draft ATO TRM for NAS Support from early CY07
		Collaboration/ Communication	*See Appendix A - New Types*	*See Appendix A - New Types*	*See Appendix A - New Types*			
			Instant Messaging	*See Appendix A - New Types*	*See Appendix A - New Types*			
		Other Electronic Channels	**Terminal Communications**	NS ElitePlus 3.12	SSL compliant software such as Blue Zone		2006: DOT has a license for 350 concurrent users of Blue Zone (intended for FPPS usage)	N/A
		Internet, Intranet						
		Extranet		SofToken II				N/A
		Thin Client		Citrix Metaframe	Citrix Metaframe	SAVES Microtech	SAVES COTS SW contract to be awarded in March	TBD
		Peer to Peer (P2P)	N/A	Not Authorized	Not Authorized		FAA and DOT users are not authorized to install or use software applications on DOT computers and networks unless expressly authorized in writing.	N/A

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Service Access and Delivery	**Delivery Channels**	**Remote Access/ Virtual Private Network (VPN)**	FIPS 140-2, Compatible with IETF's Lightweight Directory Access Protocol (LDAP), FIPS 200, NIST SP 800-53	FTI FRAC Solution, AVS IAP VPN at AEA, Cisco RSA 2 factor (AGL and other IAPs), and other solutions managed by FAA Internet Access Points	Solutions provided by FTI FRAC (includes dialup, VPN or aircard). Other solutions must meet the requirements stated in Comments;	Includes FTI Program	Remote access products should meet these requirements: > Must allow for 2 factor authentication or otherwise be compliant with OMB Memo M-06-16 dated June 23, 2006 > Must support LDAP Integration; > Must minimize security vulnerabilities (some VPN products have known vulnerabilities); > Must support encrypted communications including the ability to upload and download sensitive data. > Support access to both NAS and NAS Support networks when the originator is in a private domain and where policy allows it. > Long run need for the FAA remote access and VPN solutions to be compatible with FAA and/or DOT logical access and authentication solution (currently being formulated in an early stage program for DOT and FAA); Includes HSPD-12 requirements > At least one standard solution must be operational internationally from foreign countries - including those where FAA has offices (includes parts of Europe and China). > Each standard solution must have multiple points of access to the FAA network (not just through one IAP). > Requirement for at least one remote acce resilient in times of a disaster or pandemic.	N/A - requirements based standard
	Service Requirements	**Legislative/ Compliance**						
		Authentication/ Single Sign-On	FIPS 200 and 201, HSDP-12; GSA Government Smart Card Handbook Feb 2004 (http://www.smartcard.gov/information/smartcardhandbook.doc)		1) Transparent smart card reader (vetted by GSA Approved Product List) that is FIPS 201 compliant; must be bought off FAA Dell BPA, 2) PIV middleware software called ActivClient 6.1 offered by Actividentity Inc.	1) Dell BPA is the required source for smart card readers 2) DOT/FAA has an enterprise license through the LAACS program for ActivClient providing for 60,000 seats in FY2009 through FY2010. 3) See AIO/AIS for vehicles for external USB connected smart card readers for legacy PCs	Current smart card reader (SCR) offerings on Dell BPA include: 1) Dell Keyboard/SCR Combo (SK3205), 2) Built in Dell SCR for laptops, and 3) OmniKey 3121 USB reader (standalone device); Employees needing ergonomic or wireless keyboard need to use the standalone USB smart card reader - currently Omni 3121 USB SCR. The same is true for legacy PCs needing a smart card reader added to their PC system.	N/A
		Hosting						
	Service Transport	**Supporting Network Services**						
		Service Transport						

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Service Platform and Infrastructure	Business Management Applications	Desktop Suite		Office 2003	Office 2003	Some FAA organizations participate in a Microsoft Enterprise License Agreement. See your CIO for more information.		Rationale a) ATO, AVS, and other parts of FAA have entered into an enterprise license for Microsoft products, b) see the "2007 analysis on Microsoft enterprise license and competing products (Open Office, Google) by ARD" and c) fosters sharing of files and information with the rest of DOT, other federal agencies, and with public stakeholders"
		Project Management		`	Microsoft Project (current or most recent past version)	SAVES Microtech		Rationale a) ATO, AVS, and other parts of FAA have entered into an enterprise license for Microsoft products, b) see the "2007 analysis on Microsoft enterprise license and competing products (Open Office, Google) by ARD" and c) fosters sharing of files and information with the rest of DOT, other federal agencies, and with public stakeholders"
		File Compression & Data Encryption	FIPS 140-2	Winzip (file compression only; transitional)	Encryption Products Validated by NIST for FIPS 140-2 encryption requirements including SecureZip from PKWARE Inc.	GSA Smart Buy Agreement (Winzip)	SecureZip acquired for FAA by AIS in FY09; AHR and AGC are using it. Winzip's module is not validated for FIPS 140-2 compliance as of January 2009; Relates to ATO CR 08-25	
		Document Management		*See Appendix A - New Types*	*See Appendix A - New Types*			
		PDF		Adobe Acrobat	Adobe Acrobat (current or most recent past version)	Microsoft EA, SAVES Microtech	FY08 - ARP acquisition of PDF Creator as a less expensive PDF authoring product. SAVES COTS SW contract to be awarded in March 2009.	TBD
		Business/ Technical Diagramming		Visio 2003, IBM System Architect Visio Process Integrator	Visio (current or most recent past version)	Microsoft ELA for ATO, ARP, and AHR	Standard and Professional versions are available.	TBD
		Graphics						
	Support Platforms	Wireless/ Mobile				GTSI SAVES contract has Cisco wireless and VoIP components		
		Platform Independent						
		Platform Dependent		*See Appendix A - New Types*	*See Appendix A - New Types*			

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	Delivery Services	**Web Servers**						
		Media Servers		*See Appendix A - New Types*	*See Appendix A - New Types*			
		Application Servers						
		Portal Servers						
	Software Engineering	**Integrated Development Environment**						
		Software Configuration Management		*See Appendix A - New Types*				
		Test Management						
		Modeling		*See Appendix A - New Types*				
	Database/ Storage	**Database**	*See Appendix A - New Types*	Oracle, Microsoft SQL Server	SQL compliant RDBMSs to include only Oracle 11g, Oracle 10g and MS SQL Server 2005	DOT Oracle ELA and MS EA, SAVES Microtech (for MS)		Rationale: a) DOT and FAA have an enterprise license for many Oracle products. c) AVS has an enterprise license agreement with Microsoft that includes Microsoft SQL Server for many of its custom applications.
		Data Modeling		*See Appendix A - New Types*				
		Storage						
			Computer					
			Server Operating Systems	Windows Server 2008 (OS only, not for Virtualization), Windows Server 2003; Windows 2000 server (expiring in July 2010); Sun Solaris 10 and Red Hat Enterprise Linux	Windows Server 2003, Windows Server 2008 (Release 2 and the prior initial release), Solaris Version 10 (a type of Unix), Red Hat Enterprise Linux	SAVES GTSI, Dell BPA for Windows Server	Server Operating System standards;	Rationale: See server rationale (3 rows below)
			CIS Virtual Machine Security Guidelines (Version 1.0 – September 2007 or more recent published version) and DISA Virtual Computing Security Technical Implementation Guide Draft Version 1 Release 0.1 (or more recent published version)	VMware server products from VMware, Inc.; Includes VMware ESX Server, VMware Server, etc.	VMware server products from VMware, Inc. - - Scope of this standard is limited to servers operated or managed by one of FAA's enterprise data centers.	AIO has licenses available on a three-year contract	The Center for Internet Security (CIS): Virtual Machine Security Guidelines Version 1.0 – September 2007 (http://www.cisecurity.com) DISA Virtual Computing Security Technical Implementation Guide Version 1 Release 0.1 – April 13, 2007 (see http://iase.disa.mil/stigs/draft-stigs/Virtual-Computing-STIG-V1R01.doc)	Rationale: VMware offers more mature and robust capabilities than its competitors including central management capabilities. It also leads significantly in market share for server virtualization. Standardizing on one server virtualization product will optimize FAA's capability to use features of virtualization including failover and disaster recovery. Finally, it is the product currently in use in FAA organizations and is the product most able to meet FAA requirements now.

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		Servers/ Computers	**Storage including Storage Area Networks (SAN)/Arrays**	Many vendors at FAA today (Sun, EMC, Compaq, Sun, IBM, HP, NetApp, Dell, etc.)	For predominantly Sun server environments, the Sun product line of SANs; For predominantly Dell server environments, the Dell/EMC line of SANs. NetApp SAN or Hitachi line of storage solutions for any server environment.	SAVES GTSI (Sun, NetApp, Hitachi) and Dell BPA		Rationale: 1. Compatibility with server standards 2. System Support and Security are fostered and enabled through a more homogeneous server environment. 3. Balance our vulnerability to vendor risks against the need for more homogeneity to control support costs and expedite system support. 4. FAA's IT Standards for servers must recognize our legacy, As-Is environment while also positioning the Agency for long term opportunities for a more consolidated environment
			Server - X86 and RISC standards	See Tab for Server standards		SAVES GTSI and Dell BPA		Rationale: 1. System Support and Security are fostered and enabled through a more homogeneous server environment. 2. Balance our vulnerability to vendor risks against the need for more homogeneity to control support costs and expedite system support. 3. FAA's IT Standards for servers must recognize our legacy, As-Is environment while also positioning the Agency for long term opportunities for a more consolidated server environment 4. The advent of the more open environment of Linux offers strategic advantages 5. For FAA, migration from one vendor operating system to another vendor operating system is an expensive undertaking with significant opportunity costs. 6. Some of our non-NAS servers must provide high reliability and availability for mission support applications.
			Microprocessor - Desktop	Pentium IV	Intel core 2 duo processor, 2.5 GHz or higher	Dell BPA		Rationale: Compatibility and capacity to support FAA's desktop operating system, email and desktop software (for writing, calculations and presentations) Comments: Compatibility with current operating system and Windows Office are key factors in selecting the appropriate speed and memory for desktop being purchased.

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	Hardware/ Infrastructure	**Embedded Technology Devices**	**Data Center Utilities**		See tab "Data Center Utilities"		Includes standard tools for use in data centers for functions such as load balancing, facility and equipment power management, etc.	
			Microprocessor - Laptop	N/A	Dell Latitude Laptops – Intel core 2 duo processor – recommend 2 GHz or higher	Dell BPA	This laptop standard does not apply to ultra portables, meaning devices weighing 4 pounds or less, less than 1 inch thick, and having a display less than 14 inches diagonally. There is no current FAA standard for tablet PCs. Thus far, AVS has procured a tablet type PC from Fujitsu via competitive procurement; The Dell BPA offers a Dell tablet currently.	Rationale: a) Meet FAA's functional requirements for laptops stated in documents such as "AVS CM Team Hardware Spec Recommendations for FY06" April 25, 2006; b) Compatibility with desktop standard due to need to limit training, staff requirements, and costs for system administration support; c) By allowing any Dell laptop, the standard allows FAA organizations to select varying sizes and other factors that are unique to their requirements.
			RAM *[refer to Service Sub-Specifications (by LOB)]*	1 GB	4 GB	SAVES GTSI	More than 4 GB cannot be used in a 32 bit architecture. Selected 4 GB instead of 3 GB due to dual channel architecture (two 2 GB chipsets) and low cost difference between 3 and 4 GB.	Rationale: RAM is tied to operating system, Office requirements, and email requirements. Microsoft recommends 1 Gigabyte (minimum) for its Vista desktop operating system. IBM strongly recommends 1.5 GB of RAM for Lotus Notes 8.02.
			Hard Disk Drive	More than 20 GB on average today	Based on user profile, past history, and LAN infrastructure	SAVES GTSI		As of 6/04, published Microsoft system requirements for Windows 2000 Professional requires 2 GB.
		Peripherals	**Optical Disk**			SAVES GTSI		
			Storage	CD-RW	Combination CD-RW/DVD-R (read only) allowing for the option for a DVD-RW	SAVES GTSI and Dell BPA	Encryptable gigabyte thumb drive is a user option; Laptops may have more of a need for a DVD-RW than desktop configurations.	N/A
			CD Creation			SAVES GTSI	Desktop manufacturers supply this software with the hardware. FAA LOBs have had good experience with this type of manufacturer-supplied software and have opted to avoid standardizing this software as the cost to change the software is high relative to the benefits.	
			Network Card	10Mbps	10/100/1000 Mbps		10/100/1000 is built-in to Pentium 4 desktop systems being bought today.	N/A
			Monitor	19" LCD monitors*[compliant with Section 508 criteria]*	LCD monitors *[compliant with Section 508 criteria]*	SAVES SDV (replacements and larger sizes) and Dell BPA (with workstation purchase)	Section 508 criteria are in 36 CFR 1194 and provide requirements to hardware manufacturers and software suppliers	N/A (not a vendor product standard)
			Keyboard	*[industry standard, as supplied]*	*[industry standard, as supplied]*			
			Video Card	*[industry standard, as supplied]*	*[industry standard, as supplied]*		Some users will require a video card with additional memory if they need to run multiple, complex applications simultaneously.	

APPENDIX A: FAA INFORMATION TECHNOLOGY STANDARDS								
SERVICE AREA	**SERVICE CATEGORY**	**SERVICE STANDARD**	**Relevant International/Government Standard**	**FAA Minimum Standards ["Build To"]**	**FAA Acquisition Standards ["Buy To"]**	**Current Enterprise Agreements & Contracts**	**Comments**	**Rationale**
			Mouse	2-button scroll wheel mouse	2 button optical scroll mouse (not wireless)		AMI has found that a 2 button optical scroll mouse has fewer maintenance calls.	
			Sound Card	*[industry standard, as supplied]*	*[industry standard, as supplied]*			
			Ports	2 USB 2.0			Industry standard speed	
			Printers - Require printers that support double-sided printing as well as Copiers that support double-side copying of internal government documents			SAVES Lexmark Contract	Various federal regulations call for double-sided copying in various contexts including Executive Orders 12873 and 13423	
		WAN						
		LAN						
		Network Devices/ Standards		CounterAct from ForeScout Technologies Inc (network access control)	See Tab for network devices (including routers and switches)	SAVES GTSI	ATO and ARC investment in CounterAct for network access control	Rationale: FAA's non-NAS networking environment has a long history of being almost entirely made up of Cisco routers, switches, etc. Adding other vendors would increase costs due to required skill sets and could complicate problem diagnosis and resolution. Comment: See Tab for Network Devices (in this Excel file)
		Video Conferencing	H.323, H.239 for conference room systems	Tandberg and Polycom VTC products	Tandberg and Polycom VTC products			Rationale: Need for vendor tools to be able to interoperate. Existing AVS investment in Polycom and ATO investment in Tandberg
Component Framework	**Security**	**Certificates/ Digital Signatures**						
		Laptop Encryption	FIPS 140-2	McAfee Endpoint Encruption (previously called Safeboot)	McAfee Endpoint Encruption (previously called Safeboot)	SAVES Microtech		Rationale: Federal mandate on the need for encryption of mobile devices such as laptops. A DOT-wide effort resulted in selection and implementation of Safeboot.
		Supporting Security Services		Current version of Trend Micro Office Scan, McAfee VirusScan Enterprise or Symantec Antivirus Enterprise Edition	Current version of Trend Micro Office Scan, McAfee VirusScan Enterprise or Symantec Antivirus Enterprise Edition	SAVES Microtech		Rationale: See "Anti Virus Software Standardization Phase 3 Approach, Options & Recommendation" from July 2005; Comment: Desktop Antivirus software standard; Transitioning away from CA e-Trust; Existing uses of e-Trust are grandfathered
	Presentation/ Interface	**Static Display**						
		Dynamic/ Server-side Display						
		Content Rendering						
		Wireless/ Mobile/ Voice						
	Business Logic	**Platform Independent**						
		Platform Dependent						
	Data Interchange	**Data Interchange**						

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		GIS Data Interchange	Current or prior version of Geographic Markup Language (GML), Aeronautical Information Exchange Model (AIXM), OpenGIS Web Feature Service / ISO 19142 (WFS)					
	Data Management	**Database Connectivity**						
		Reporting and Analysis - Middle Management	SQL	Business Objects from Business Objects Inc.; Oracle Discoverer		Oracle ELA for Discoverer; Business Objects - SAVES Microtech		N/A
		Reporting and Analysis - Operational		Oracle Discoverer		Oracle ELA		N/A
		Reporting and Analysis - Senior Management						
Service Interface and Integration	**Integration**	**SOA Standards**	See SOA Worksheet	See SOA Worksheet	See SOA Worksheet			
		Middleware						
		Database Access						
		Transaction Processing						
		Object Request Broker	See SOA Worksheet	See SOA Worksheet	See SOA Worksheet			
		Enterprise Application Integration	See SOA Worksheet	See SOA Worksheet	See SOA Worksheet			
	Interoperability	**Data Format/ Classification**						
		Data Types/ Validation						
		Data Transformation						
	Interface	**Service Discovery**	See SOA Worksheet	See SOA Worksheet	See SOA Worksheet			
		Service Description/ Interface	See SOA Worksheet	See SOA Worksheet	See SOA Worksheet			
Agency Applications								

SOA Standards										
Relevant International/ Governmental Standard	**FAA Minimum Standards ["Build To"]**	**FAA Acquisition Standards ["Buy To"]**	**Standard Title**	**Standard Date**	**Status**	**Source**	**Standards Body**	**NASEA**	**URL**	**Comment**
Drawn partly from WS-I Profile 1.2 (Working Group Draft - October 24, 2007)										http://www.ws-i.org/Profiles/BasicProfile-1_2(WGAD).html
	If your SOA project will use REST for more light weight development efforts (instead of SOAP), then the following standards from those listed below									
	apply to your project:: WSDL 2.0, RFC 2965, RFC 4627 (JSON), RFC 4287 (Atom), TLS 1.0, SSL 3.0									
Semantics										
TBD										
Processes										
WS-BPEL 2.0	WS-BPEL 2.0	WS-BPEL 2.0	Web Services Business Process Execution Language	11-Apr-2007	active		OASIS		http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsbpel	
Implementing Enterprise Web Services 1.1	Implementing Enterprise Web Services 1.1	Implementing Enterprise Web Services 1.1	Implementing Enterprise Web Services 1.1	11-May-2006	active		JCP		http://jcp.org/en	JSR 109
Description										
WSDL 1.1	WSDL 1.1	WSDL 1.1, WSDL 2.0	Web Services Description Language (WSDL) 1.1	15-Mar-2001			W3C		Web Services Description Language (WSDL) 1.1	
UDDI 3.0	UDDI 3.0	UDDI 3.0	Universal Discovery, Description, Integration	3-Feb-2005	active		OASIS		http://www.oasis-open.org/committees/uddi-spec/doc/tcspecs.htm#uddiv3	
Messages										
SOAP 1.2 (with compatibility back to SOAP 1.1)	SOAP 1.1	SOAP 1.2 (with compatibility back to SOAP 1.1)	Simple Object Access Protocol	27-Mar-2007	active	Weather	W3C	Yes	http://www.w3.	The NASEA TV-1 references SOAP 1.2. WS-I Basic Profile 1.2 references SOAP 1.1
MTOM		MTOM	SOAP Message Transmission Optimization Mechanism	25-Jan-2005	active	SWIM	W3C	Yes	http://www.w3.org/TR/2005/REC-soap12-mtom-20050125/	
WS-Addressing v1.0 - Core		WS-Addressing v1.0 - Core	Web Services Addressing Core	9-May-2006	active	SWIM	W3C	Yes	http://www.w3.org/TR/2006/REC-ws-addr-core-20060509/	
XML 1.0		XML 1.0	Extensible Markup Language (XML) Fourth Edition	29-Sep-2006	active	Weather & SWIM	W3C	Yes	Extensible Markup Language (XML) 1.0 (Second Edition)	
Active MQ		Active MQ	Apache Active Message Queuing Application	21-Nov-2008	active	SWIM	ASF	Yes	http://activemq.apache.org/nms/	
Xpath v1.0		Xpath v1.0	XML Path Language v1.0	16-Nov-1999	active	SWIM	W3C	Yes	http://www.w3.org/TR/xpath	
Xquery		Xquery v1.0	XML query Language	23-Jan-2007	active	SWIM	W3C	Yes	http://www.w3.org/XML/Query/ (Cookie specification for managing states)	
XSLT v1.0		XSLT v1.0	XSL Transformations v1.0	16-Nov-1999	active	SWIM	W3C	Yes	http://www.w3.org/TR/xslt	
WS-Reliability v1.1			Web Service Reliability v1.1	15-Nov-2004	active		OASIS		http://docs.oasis-open.org/wsrm/ws-reliability/v1.1/wsrm-ws_reliability-1.1-spec-os.pdf	
WS-RM v1.2		WS-RM v1.2	Web Service Reliable Messaging	2-Feb-2009	active		OASIS		http://docs.oasis-open.org/ws-rx/wsrm/200702/wsrm-1.2-spec-os.html	
JAXM v1.1		JAXM v1.1	Java API's for XML Messaging	12-Apr-2006	active		JCP		http://jcp.org/ab	JSR 67
JMS		JMS 1.1	Java Message Service	18-Mar-2002	active		JCP		http://www.jcp.org/en/jsr/detail?id=914	
XML Schema 1.1	XML Schema 1.1	XML Schema 1.1	XML Schema 1.1	28-Oct-2004	active		W3C		http://www.w3.org/XML/Schema#dev	
XML Signature, Second Edition	XML Signature, Second Edition	XML Signature, Second Edition	XML Signature, Second Edition	10-Jun-2008	active		W3C		http://www.w3.org/TR/xmldsig-core/	
XML Encryption 1.0	XML Encryption 1.0	XML Encryption 1.0	XML Encryption 1.0	10-Dec-2002	active		W3C		http://www.w3.org/TR/2002/REC-xmlenc-core-20021210/	
JAX-WS 2.0	JAX-WS 2.0	JAX-WS 2.0	Java API for XML-Based Web Services 2.0	11-May-2006	active		JCP		http://jcp.org/en	JSR 224
JAXR 1.0	JAXR 1.0	JAXR 1.0	Java API for XML Registries 1.0	11-Jun-2002	active		JCP		http://jcp.org/en	JSR 93
Communications										
HTTP 1.1		HTTP 1.1	Hypertext Transfer Protocol (RFC 2616)	1-Jun-1999	active	SWIM	IETF	Yes	RFC2616: Hypertext Transfer Protocol -- HTTP/1.1	

Relevant International/ Governmental Standard	FAA Minimum Standards ["Build To"]	FAA Acquisition Standards ["Buy To"]	Standard Title	Standard Date	Status	Source	Standards Body	NASEA	URL	Comment
RFC 2965		RFC 2965	RFC 2965: HTTP State Management Mechanism	1-Oct-2000			IETF		RFC2965: HTT	Cookie specification for managing states
Security										
RFC 2818		RFC 2818	RFC 2818: HTTP over TLS	1-May-2000					RFC2818: HTTP Over TLS	
TLS 1.0		TLS 1.0	RFC 2246: The TLS Protocol 1.0	1-Jan-1999					RFC2246: The	TLS is used in systems such as Govtrip; The TLS protocol allows client/server applications to communicate across a network in a way designed to prevent eavesdropping, tampering, and message forgery. TLS provides endpoint authentication and communications confidentiality over the Internet using cryptography.
SSL 3.0		SSL 3.0	SSL Protocol 3.0	18-Nov-1996	active	SWIM		Yes	http://tools.ietf.	Transport Layer Security (TLS) and its predecessor, Secure Sockets Layer (SSL), are cryptographic protocols that provide security and data integrity for communications over networks such as the Internet. TLS and SSL encrypt the segments of network connections at the Transport Layer end-to-end. SSL 3.0 has security enhancements over SSL 2.0; SSL 2.0 is disabled automatically in a number of web browsers
RFC 2459		RFC 2459	RFC 2459: Internet X509 Public Key Infrastructure Certificate	1-Jan-1999					RFC2459: Internet X.509 Public Key Infrastructure Certificate and CRL Profile	
WS-Secure Conversation 1.3		WS-Secure Conversation 1.3	Web Service Secure Conversation v1.3	1-Mar-2007	active		OASIS		http://docs.oasis-open.org/ws-sx/ws-secureconversation/200512/ws-secureconversation-1.3-os.html	
WS-Trust 1.3		WS-Trust 1.3	Web Service Trust v1.3	19-Mar-2007	active		OASIS		http://docs.oasis-open.org/ws-sx/ws-trust/200512/ws-trust-1.3-os.html	
WS-Policy 1.2		WS-Policy 1.2	Web Service Policy v1.2	25-Apr-2006	active		W3C		http://www.w3.org/Submission/WS-Policy/	
WS-Federation 1.2		WS-Federation 1.2	Web Service Federation v1.2	22-May-2009	active		OASIS		http://docs.oasis-open.org/wsfed/federation/v1.2/os/ws-federation-1.2-spec-os.html	
WS-Security 1.1		WS-Security 1.1	Web Service Security v1.1 (SOAP Message Security)	1-Feb-2006	active		OASIS		http://www.oasis-open.org/committees/download.php/16790/wss-v1.1-spec-os-SOAPMessageSecurity.pdf	
WS-I Basic Security Profile 1.1		WS-I Basic Security Profile 1.1	Web Service Interoperability Basic Security Profile v1.0	30-Mar-2007	active		WS-I		http://www.ws-i.org/Profiles/BasicSecurityProfile-1.0.html	
Management										
TBD										

Server Standard Summary:
IT Server standards include:

- Windows Server Standard = Dell (Intel) and Sun (Intel)
- Unix Server Standard = Sun (Sparc w/Solaris)
- Linux Server Standard = Dell (Intel) and Sun (AMD)

Note: The servers below represent base configurations and are customize-able (e.g., increased CPU speed, added RAM, and additional internal memory) as per the corresponding procurement vehicles.

High-level Detail:

Windows Servers. For exact specifications and/or additional information please visit the dell website at http://www.dell.com.

	Data Center Application and Virtualization Class Servers			Infrastructure Class Servers		
Product Attribute	**Dell PowerEdge**	**Dell PowerEdge**	**Dell PowerEdge**	**Dell Power Edge**	**Dell Power Edge**	**Dell Power Edge**
Model Number	**R610**	**R710**	**R900**	**R210**	**R410**	**R510**
Form Factor	1U Rack Mount	2U Rack Mount	4U Rack Mount	1U Rack Mount	1U Rack Mount	2U Rack Mount
Max. CPUs	Up to 2 Quad-Core Intel® Xeon™ Processors	Up to two quad-core or dual-core Intel® Xeon® 5400, 5300, 5200, or 5100 Processors	Up to 4 Six-Core 64-bit Intel® Xeon™ Processors	Single Quad-Core Intel® Xeon™ Processors	Up to 2 Quad-Core Intel® Xeon™ Processors	Up to 2 Quad-Core Intel® Xeon™ Processors
Clock Speed	3 GHz processor	1.60 - 2.93 GHz Processors	1.60 - 2.93 GHz Processors	1.60 - 2.93 GHz Processors	1.60 - 2.93 GHz Processors	1.60 - 2.93 GHz Processors
RAM	Minimum: Two 512MB DIMMs (1GB RAM) Maximum: Eight 4 GB DIMMs (32GB RAM)	Up to 144GB (18 FBD DIMM slots): 512MB/1GB/2GB/4GB DDR3 memory	Minimum: 1 GB Maximum: 256GB (Fully Buffered DIMMs 667 MHz)	Up to 16GB DDR3 Ram	Up to 64GB DDR3 Ram	Up to 128GB DDR3 Ram
Int. Disk	Up to 3TB (with 6x 500GB SATA HDDs)	Up to 6TB via six 3.5” 1TB hot-plug SATA hard drives	Up to 2TB internal storage	Up to 2TB internal Storage	Up to 4TB internal Storage	Up to 24TB internal Storage

Unix Servers. For exact specifications and/or additional information please visit the sun website at http://www.sun.com

All Sun SPARC mid-range and enterprise servers. These are the Sun SPARC Enterprise M series servers and the Sun SPARC Enterprise T Servers

Solaris, Windows, Linux, VMware Servers

Product Attribute	SUN AMD Server A -- Description	SUN SUN AMD Server B -- Description	SUN AMD Server C -- Description
Model Number	X2200 M2	X4240 M2	X4600 M2
Max. CPUs	Up to two Dual-core or Quad-core AMD Opteron 2000 series processors	One or two Dual-Core, Quad-Core, or enhanced Quad-Core AMD Opteron processors	Either 2, 4, 6, or 8 Dual-Core or Quad-Core AMD Opteron Processor 8000 Series
Clock Speed	Up to 3 GHz	Up to 3 GHz	Up to 3GHz
RAM	Up to 64 GB	Up to 64 GB	Up to 256 GB
Int. Disk	Up to two 3.5 inch SATA II or SAS HDDs (2TB maximum of internal storage)	16x73/146/300 GB	Up to Four internal 2.5 inch SAS HDDs x 146 GB (Maximum 584 GB)

Solaris, Windows, Linux, VMware Servers

Product Attribute	SUN Intel Xeon Server A -- Description	SUN Intel Xeon Server B -- Description
Model Number	X4150	X4450
Max. CPUs	Up to Two Dual-core Xeon Processor 5100 series or Quad-core Intel Xeon Processor 5300 series	Up to Four Dual-core Intel Xeon Processor 7200 series or Quad-core Intel Xeon 7300 series
Clock Speed	Up to 2.93 GHz	Up to 3 GHz
RAM	Up to 64 GB	Up to 128 GB
Int. Disk	Up to 8 2.5 inch SAS Drives (1TB)	Up to 8 2.5 inch SAS drives (1TB)

Network Device Standards - Summary:

IT Network Device standards include:

- Router Standard = Cisco
- Switch Standard = Cisco
- Hub Standard = Netgear

High-level Detail:

Routers. For exact specifications and/or additional information please visit the Cisco Website at http://www.cisco.com.

Product Attribute	Cisco 3800 Series (Remote Site Access)
Model Numbers	3825
	3845

Switches. For exact specifications and/or additional information please visit the Cisco Website at http://www.cisco.com.

Must be a configuration that satisfies all known requirements for the multi-year life of the switch including required IPv6 implementation planned for FY08

Product Attribute	Cisco 3750 Series	Cisco 4500 Series (Mid to Large) (Small to Mid)	Cisco 6500 Series
Model Numbers	All models in series	All models in series	All models in series

Hubs (unmanaged switches). For exact specifications and/or additional information please visit the Netgear Website at http://www.netgear.com.

Product Attribute	Netgear	Netgear	Netgear
Model Numbers	FS-105	FS-108	GS-108

Data Center Utilities			
The following standards apply to FAA enterprise data centers (EDCs)			
	Buy-to Standard		**Current Agreements / POC**
Function	**Product**	**Vendor**	
Load Balancing	Big-IP	F5 Networks Inc.	
Remote Environmental (security) monitoring	Netbotz	APC	SAVES
Facility Power Management and Monitoring	EnerSure and TrendPoint One	TrendPoint	
Equipment Power Management and Monitoring	EnerSure and TrendPoint One	TrendPoint	
EDCs are			
1) ATO-A EDC at MMAC			
2) ATO-A EDC at WJHTC			
3) ARC Systems Management Facility at MMAC			
4) AVS Operations Center at MMAC			